

Amendments to the Claims

This listing of the claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A method for removing MPEG-2 chroma upconversion artifacts in a video stream comprising:

detecting a presence of artifacts in an incorrectly upsampled MPEG-2 video stream based on a difference between even line and odd line frequency detection values of the video stream, wherein said frequency detection values are obtained by performing a partial DFT (Discrete Fourier Transform) on chroma data and using the transformed chroma data in the frequency domain; and

removing the presence of artifacts resulting in an artifact free video stream.

2. (Previously Presented) A method for removing MPEG-2 chroma upconversion artifacts in a video stream comprising

detecting a presence of artifacts in an incorrectly upsampled MPEG-2 video stream, comprising the steps of:

obtaining a first set of frequency detection values for a chroma component of a plurality of pixels from a plurality of even numbered rows;

obtaining a first set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of even numbered rows;

obtaining a second set of frequency detection values for a chroma component of a plurality of pixels from a plurality of odd numbered rows;

obtaining a second set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of odd numbered rows;

calculating a first sum of an absolute value of the first set of frequency detection values;

calculating a first sum of an absolute value of the first set of vertically lowpass filtered frequency detection values;

calculating a second sum of an absolute value of the second set of frequency detection values;

calculating a second sum of an absolute value of the second set of vertically lowpass filtered frequency detection values;

calculating a first absolute value difference between the first sum of the absolute value of the first set of frequency detection values and the second sum of the absolute value of the second set of frequency detection values;

calculating a second absolute value difference between the first sum of the absolute value of the first set of vertically lowpass filtered frequency detection values and the a second sum of an absolute value of the second set of vertically lowpass filtered frequency detection values; and

confirming the presence of artifacts if a ratio between the first absolute value difference and the second absolute value difference is larger than about a threshold; and

removing the presence of artifacts resulting in an artifact free video stream.

3. (Original) The method of claim 2 wherein the threshold is 10.

4. (Original) The method of claim 2 wherein the first and second sets of frequency detection values and the first and second sets of lowpass filtered frequency detection values are obtained by performing a partial discrete fourier transform on a set of vertically aligned chroma data samples.

5. (Original) The method of claim 1 wherein removing the presence of artifacts comprises lowpass filtering a set of chroma data.

6. (Original) The method of claim 5 wherein the lowpass filtering of the set of chroma data comprises:

doubling a current chroma data sample to be filtered;

adding a row above chroma data sample from directly above the current chroma sample;

adding a row below chroma data sample from directly below the current chroma sample; and

dividing by 4.

7-9. Cancelled.

10. (Currently Amended) A method for removing chroma upconversion artifacts in a video stream comprising:

determining a difference between even line and odd line frequency detection values of the video stream, wherein said frequency detection values are obtained by performing a partial DFT (Discrete Fourier Transform) on chroma data and using the transformed chroma data in the frequency domain;

detecting a presence of artifacts in an upsampled video stream based on [[a]] the determined difference; and

removing the presence of artifacts resulting in an artifact free video stream.

11. (Currently Amended) A method for removing chroma upconversion artifacts in a video stream comprising:

determining a difference between even line and odd line frequency detection values of the video stream;

detecting a presence of artifacts in an upsampled video stream based on the determined difference; and

removing the presence of artifacts resulting in an artifact free video stream; The method in claim 10, wherein the detecting a presence of artifacts in an upsampled video stream further comprises:

calculating a first sum of an absolute value of a first set of frequency detection values and a second sum of an absolute value of a first set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of even numbered rows;

calculating a third sum of an absolute value of a second set of frequency detection values and a fourth sum of an absolute value of a second set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of odd numbered rows;

calculating a first absolute value difference between the first sum and the third sum and a second absolute value difference between the second sum and the a fourth sum; and

confirming the presence of artifacts if a ratio between the first absolute value difference and the second absolute value is within a magnitude relationship of an identified threshold.

12. (Previously Presented) The method of claim 11, wherein the chroma upconversion artifacts comprise MPEG-2 chroma upconversion artifacts.

13. (Currently amended) An apparatus for removing chroma upconversion artifacts in a video stream comprising:

means for determining a difference between even line and odd line frequency detection values of the video stream, wherein said frequency detection values are obtained by performing a partial DFT (Discrete Fourier Transform) on chroma data and using the transformed chroma data in the frequency domain;

means for detecting a presence of artifacts in an upsampled video stream based on a the determined difference; and

means for removing the presence of artifacts resulting in an artifact free video stream.

14. (Currently Amended) An apparatus for removing chroma upconversion artifacts in a video stream comprising:

means for determining a difference between even line and odd line frequency detection values of the video stream;

means for detecting a presence of artifacts in an upsampled video stream based on a the determined difference; and

means for removing the presence of artifacts resulting in an artifact free video stream;

~~The apparatus in claim 13, wherein the means for detecting a presence of artifacts in an upsampled video stream further comprises:~~

means for calculating a first sum of an absolute value of a first set of frequency detection values and a second sum of an absolute value of a first set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of even numbered rows;

means for calculating a third sum of an absolute value of a second set of frequency detection values and a fourth sum of an absolute value of a second set of vertically lowpass filtered frequency detection values for a chroma component of a plurality of pixels from a plurality of odd numbered rows;

means for calculating a first absolute value difference between the first sum and the third sum and a second absolute value difference between the second sum and the a fourth sum; and

means for confirming the presence of artifacts if a ratio between the first absolute value difference and the second absolute value is within a magnitude relationship of an identified threshold.

15. (Previously Presented) The apparatus of claim 14, wherein the chroma upconversion artifacts comprise MPEG-2 chroma upconversion artifacts.